

Florida Fruit & Vegetable Association's 2005 Strategy

Strategic Approach

Florida Fruit and Vegetable Association collaborates with state, regional and federal regulatory agencies, stakeholders, other grower organizations, the crop protection registrant community and University extension specialists on an extensive array of actions designed to advance the implementation and embracement of integrated pest management practices for achieving meaningful crop protection chemical risk reductions.

Activities for the Coming Year

Activity 1

One such project involves efficacy maintenance of a key tool used in the production of our fruiting vegetable crops. In fact, the most immediate insect management challenge facing Florida's vegetable producers is to delay the onset of and manage pest resistance to the neonicotinoid class of insecticides.

How does this activity reduce pesticide risk?

Loss of efficacy to the neonicotinoids would surely lead to dependency on old-fashioned weekly or twice weekly applications of broad-spectrum insecticides at much higher application rates per acre. Reverting dependency to these higher toxicity alternative broad-spectrum insecticides contradicts the mission of the Pesticide Environmental Stewardship Program.

Fruiting vegetable crops (ex. tomatoes, peppers, eggplants) are among the primary vegetables produced in Florida. Florida alone produces more than 43 percent of the nation's fresh market tomatoes with a farm gate value of \$500 million per year. The state also produces more than 40 percent of the nation's fresh market peppers and nearly 75 percent of the commercial U.S. eggplant stock, with annual values of these two crops averaging near \$240 million and \$14 million, respectively.

Florida's climactic circumstances allow for insect, disease and weed pests to constantly attack and place severe constraints on production. Approximately 25 percent of total direct expenses invested in producing these fruiting vegetable crops go towards purchase of crop protection materials and crop protection material application costs. Current data

show that the industry's most serious pest from the array of insects causing crop damage is still the whitefly.

Whiteflies cause losses by inducing the irregular ripening disorder and by transmitting geminiviruses, the most damaging of which is tomato yellow leaf curl virus and tomato mottle virus, which by themselves can result in total crop failures. The sticky honeydew excreted by whiteflies often glazes the plant's surface and permits the development of black sooty mold. This honeydew-induced fungus often covers the foliage and fruits, retarding growth and reducing the market value of the fruit.

Whiteflies and the viral diseases they vector are now key pests throughout the southern U.S. Traditionally, producers attempted to manage this problem with calendar applications of broad-spectrum insecticides. This practice raises concerns over risks to workers and toxicity to populations of beneficial organisms. In today's production schemes the neonicotinoid materials are the most widely used type of insecticide for whitefly management on Florida fruiting vegetable crops. They are chloronicotinyl compounds in design. Producers queried on the use of the neonicotinoid materials indicate that using this class of insecticides reduces the total number of necessary foliar insecticide applications. More than 90 percent of growers believe that neonicotinoids use allows for more use of other, less toxic insecticides, and that they contribute to greater flexibility with farmworkers. Nearly 60 percent believe that neonicotinoids use allows for greater utilization of beneficial insects. Producers also believe that using neonicotinoids results in more than a 14 percent reduction in production costs, and an additional 13 percent increase in yield. Truly this is a type of chemistry that the industry cannot afford to lose.

In recent seasons however, despite applications of a neonicotinoid insecticide to seedlings in plant production houses and additional soil applications at transplanting or up to three weeks following transplanting, fruiting vegetable producers in every production area in southern Florida experienced larger than average numbers of whitefly adult populations. Naturally, those involved are asking why so many whitefly adults are all of a sudden present. Are the whiteflies becoming resistant to the neonicotinoids? Are there other cultural activities that are contributing? What can we do now to mitigate and what are prospects for the future?

University of Florida extension insect management specialists provided confirmation of partial tolerance to neonicotinoid insecticides among our adult whitefly population. The reduced susceptibility of the whiteflies evaluated in monitoring studies would suggest reduced control. However a failure of the neonicotinoids to manage whitefly nymphs has not been noted and large increases in the whitefly population typically has not been noted until late in the crop when the effects of the neonicotinoids would have diminished. Nevertheless the high level of tolerance noted in the monitoring studies suggests a decline in the susceptibility of the adult whitefly to the neonicotinoid insecticides.

Given these resistance possibilities, producers, registrants, IPM consultants and University of Florida extension researchers banded together and established a

Neonicotinoid Resistance Management Working Group to redouble neonicotinoid resistance management efforts to preserve this valuable pest management class of chemistry. No new whitefly insecticides are foreseen in the near future, so in many ways preserving the neonicotinoids is the only thing standing between production of a decent crop and impending disaster. The Working Group developed and presented a set of resistance management strategies to the industry that have been adopted large-scale. The only possible way for such an initiative to succeed is through a concerted effort by all producers in an area. Strategies for the management of neonicotinoid resistance are based on the statements listed below. These statements serve as a fundamental guide for development of local neonicotinoid resistance management programs.

Current recommendations include:

- Resist further shortening of the two-month crop free period between harvest and planting seasons.
- Promote prompt and efficient crop destruction between fall and spring crops to decrease the number of whiteflies and sources of tomato yellow leaf curl virus that may infect subsequent crops.
- Crop destruct techniques should emphasize management of existing whitefly populations in addition to the physical destruction of the crop;
 - Use a burn down herbicide in conjunction with a heavy application of oil (2 - 4% solution) for whitefly control.
 - Avoid crop destruction during windy periods, especially when prevailing winds are blowing toward adjacent plantings.
 - Destroy crops block-by-block as harvest is completed rather than waiting for harvesting to be completed in an entire field before destroying the crop.
- Reduce overall whitefly populations by strictly adhering to cultural practices including:
 - Plant whitefly-free transplants;
 - Delay planting new crops as long as possible and destroy old crops immediately after harvest to create or lengthen a tomato free period;
 - Do not plant new crops near or adjacent to infested weeds or crops, abandoned fields awaiting destruction, or areas with volunteer plants;
 - Use UV-reflective (aluminum) plastic soil mulch;
 - Control weeds on field edges if scouting indicates whiteflies are present and natural enemies are absent;
 - Manage weeds within crops to minimize interference with spraying;
 - Avoid U-pick or pin-hooking operations unless effective control measures are continued.
- Do not use a neonicotinoid on transplants or apply only once 7 – 10 days before transplanting. Use other products in other chemical classes before this time.
- Apply a neonicotinoid at transplanting and use products of other chemical classes (such as insect growth regulators) as the control with the neonicotinoids diminishes.
- Do not use the neonicotinoids at less than the label recommended rate.

- Never follow an application (soil or foliar) of a neonicotinoid with another application (soil or foliar) of the same or different neonicotinoid on the same crop or in the same field within the same season (i.e., do not double crop with a neonicotinoid if the main crop had been treated previously, unless the double crop is planted at least 60 days after the main crop)
- Save applications of neonicotinoids for crops threatened by whitefly-transmitted plant viruses or whitefly-inflicted disorders, and consider the use of chemicals of other classes for whitefly management on other crops.

It will be necessary for all involved in the production of fruiting vegetables and other vegetable crops produced in Florida to incorporate these recommendations judiciously, to avoid resistance problems and maintain environmental quality.

How will you measure the risk reduction gained from this activity?

FFVA will continue to work with Neonicotinoid Resistance Management Working Group to determine if the current recommendations are preventing the development of resistance in this class of pesticides.